

Tidal Creek Literature Review and Relevant Web Links on Ecology, Processes, Impacts, Restoration and Management

Prepared in follow-up to the December 2011 Southeast Tidal Creek Summit
by Denise Sanger (S.C. Dept. of Natural Resources), Michael Mallin (UNC-Wilmington), and
Fred Holland (Former Director, Hollings Marine Laboratory, NOAA)

June 2012

- Ahern D, Klink RE, Wagner RA (2011) Developing on-lot storm water runoff volume controls. 21st Annual South Carolina Environmental Conference Proceedings 13.
www.sc-ec.org/images/Proceedings11/10-1%20Ahern.pdf
- Allen DM, and Barker DL (1990) Interannual variability in larval fish recruitment to estuarine epibenthic habitats. *Marine Ecology Progress Series* 63: 113-125.
- Allen DM, Edwards D, Feller RF, Hutchinson SE, and Ogburn-Matthews V (1997) Detection and analysis of unusual events in long-term zooplankton and nekton data sets from North Inlet Estuary, SC, USA. *Oceanologica Acta*. 20(1): 165-175.
- Allen DM, Haertel-Borer SS, Milan BJ, Bushek D, and Dame RF (2007) Geomorphological determinants of nekton use in intertidal salt marsh creeks. *Marine Ecology Progress Series* 329: 57-71.
- Allen DM, Johnson WS, and Ogburn-Matthews V (1995) Trophic relationships and seasonal utilization of salt-marsh creeks by zooplanktivorous fishes. *Environmental Biology of Fishes*. 42: 37-50.
- Allen DM, Ogburn-Matthews V, Buck T, and Smith EM (2008) Mesozooplankton responses to climate change and variability in a southeastern U.S. estuary (1981-2003). *Journal of Coastal Research* 55: 95-110.
- Alphin, T.D., M.H. Posey and M.E. Smith. 1997. Comparison of infauna associated with the macroalga *Caulerpa prolifera*, found in southeastern North Carolina. *Journal of the Elisha Mitchell Scientific Society* 113:16-21.
- Archambault JA, and Feller RJ (1991) Diel variations in gut fullness of juvenile spot, *Leiostomus xanthurus* (Pisces). *Estuaries* 14: 94-101.
- Arnold CL, Gibbons CJ (1996) Impervious surface coverage. *Journal of the American Planning Association* 62(2): 243-258.
- Arnold, G.L., M.W. Luckenbach and M.A. Unger. 2004. Runoff from tomato cultivation in the estuarine environment: biological effects of farm management practices. *Journal of Experimental Biology and Ecology* 298:323-346.
- Baillie, P.W. and B.L. Welsh. 1980. The effect of tidal resuspension on the distribution of intertidal epipelagic algae in an estuary. *Estuarine and Coastal Marine Science* 10:165-180.
- Basta DJ, et al. (1990) Estuaries of the United States. Prepared for the National Oceanic and Atmospheric Administration, Rockville, MC.
- Beach, D. (2002) Coastal sprawl: the effects of urban design on aquatic ecosystems in the United States. Pew Oceans Commission, Arlington, Virginia.
- Beaufort County (2010) Beaufort County Manual for Storm water Best Management Practices. Beaufort County Beaufort, SC 22.1
- Beaufort County (2012) Beaufort County Manual for Storm water Best Management and Design Practices (BMP). Beaufort County Beaufort, SC 245.

- Bergquist DC, Van Dolah RF, Riekerk GHM, Levisen MV, Crowe SE, Brock L, Greenfield DI, Chestnut DE, McDermott W, Fulton MH, Wirth E, Harvey J (2009) The Condition of South Carolina's Estuarine and Coastal Habitats During 2005-2006: Technical Report No. 103. SCDNR Marine Resources Division Charleston, SC 74.
- Bilkovic DM (2011) Response of Tidal Creek Fish Communities to Dredging and Coastal Development Pressures in a Shallow-Water Estuary. *Estuaries and Coasts* 34: 129-147
- Bozeman EL Jr., Dean JM (1980) The abundance of estuarine larval and juvenile fish in a South Carolina intertidal creek. *Estuaries* 3(2): 89-97.
- Bozeman EL, Helfman GS, Richardson T (1985) Population size and home range of American eels in a Georgia tidal creek. *Transactions of the American Fisheries Society* 114: 821-825.
- Bretsch K, and Allen DM (2006) Effects of biotic factors on depth selection by salt marsh nekton. *Journal of Experimental Marine Biology and Ecology* 334: 130-138.
- Bretsch K, and Allen DM (2006) Tidal migrations of nekton in salt marsh intertidal creeks. *Estuaries and Coasts* 29(3): 474-486.
- Buzzelli C, Akman O, Buck T, Koepfler E, Morris J, and Lewitus A (2004) Relationships among water-quality parameters from the North Inlet-Winyah Bay National Estuarine Research Reserve, South Carolina. *Journal of Coastal Research Special Issue* 45: 59-74.
- Buzzelli, C, AF Holland, DM Sanger, P Conrads. 2007. Hydrographic Characterization of Tidal Creeks with Implications for Watershed Land Use, Tidal Flushing, and Benthic Production. *Estuaries and Coasts* 30(2):321-330.
- Cahoon, L.B., J.E. Nearhoof and C.L. Tilton. 1996. Sediment grain size effect on benthic microalgal biomass in shallow aquatic ecosystems. *Estuaries* 22:735-741.
- Cahoon, L.B., J.C. Hales, E.S. Carey, S. Loucaides, K.R. Rowland and J.E. Nearhoof. 2006. Shellfish closures in southwest Brunswick County, North Carolina: Septic tanks vs. storm-water runoff as fecal coliform sources. *Journal of Coastal Research*. 22:319-327.
- Cahoon, L.B., M.A. Mallin, B. Toothman, M. Ortwine, R. Harrington, R. Gerhart, S. Gill and J. Knowles. 2007. Is there a relationship between phosphorus and fecal microbes in aquatic sediments? Report No. 366, Water Resources Research Institute of the University of North Carolina, Raleigh, N.C.
- Camilleri, J.C. and G. Ribí. 1986. Leaching of dissolved organic carbon (DOC) from dead leaves, formation of flakes from DOC, and feeding on flakes by crustaceans in mangroves. *Marine Biology* 91:337-344.
- Cain RL, Dean JM (1976) Annual occurrence, abundance and diversity of a fish in a South Carolina intertidal creek. *Marine Biology* 36: 369-379.
- Chen C, Qi J, Li C, Beardsley RC, Lin H, Walker R, Gates K (2008) Complexity of the flooding/drying process in an estuarine tidal-creek salt-marsh system: An application of FVCOM. *Journal of Geophysical Research* 113 (C07052).
- Childers DL, McKellar HN, Dame RM, Sklar FH, and Blood ER (1993) A dynamic nutrient budget of subsystem interactions in a salt marsh estuary. *Estuarine, Coastal and Shelf Science* 36: 105-131.
- Christy JH, and Morgan SG (1998) Estuarine immigration by crab postlarvae: mechanisms, reliability, and adaptive significance. *Marine Ecology Progress Series* 33: 217-229
- Costanza R, D'Arge R, de Groot R, Farber S, Grasso M, Hannon B, Lumburg K, Naeem S, O'Neill R, Parueol J, Raskin R, Sutton P, and van den Belt M (1997) The value of the world's ecosystem services and natural capital. *Nature* 387: 253-260

- Cressman KA, Posey MH, Mallin MA, Leonard LA, and Alphin TD (2003) Effects of oyster reefs on water quality in a tidal creek estuary. *Journal of Shellfish Research* 22: 753-762.
- Culliton TJ, Warren MA, Goodspeed TF, Remer DG, Blackwell CM, McDonough JJI (1990) The second report of a coastal trends series: 50 years of population change along the nation's coasts 1960-2010. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Rockville, MD. 41 p..
- Currin CA, Wainright SC, Able KW, Weinstein MP, and Fuller CM (2003) Determination of food web support and trophic position of the mummichog, *Fundulus heteroclitus*, in New Jersey smooth cordgrass (*Spartina alterniflora*), common reed (*Phragmites australis*), and restored salt marshes. *Estuaries* 26(2B): 495-510.
- Dafner, E.V., M.A. Mallin, J.J. Souza, H.A. Wells and D.C. Parsons. 2007. Nitrogen and phosphorus species in the coastal and shelf waters of southeastern North Carolina, Mid-Atlantic U.S. coast. *Marine Chemistry*. 103:289-303.
- D'Alpaos A, Lanzoni S, and Marani M (2005) Tidal network ontogeny: channel initiation and early development. *Journal of Geophysical Research* 110 (F02001).
- D'Alpaos A, Lanzoni S, Marani M, and Rinaldo A (2009) On the O'Brien-Jarrett-Marchi law. *Rend. Fis. Acc. Lincei* 20: 225-236.
- Dame, R., M. Alber, D. Allen, A. Chalmers, R. Gardner, C. Gilman, B. Kjerfve, A. Lewitus, M. Mallin, C. Montague, J. Pinckney and N. Smith. 2000. Estuaries of the south Atlantic coast of North America: Their geographical signatures. *Estuaries* 23:793-819.
- Dame R, Allen DM (1996) Between estuaries and the sea. *Journal of Experimental Biology and Ecology* 200: 169-185.
- Dame R, and Libes S (1993) Oyster reefs and nutrient retention in tidal creeks. *Journal of Experimental Marine Biology and Ecology* 171: 251-258.
- Dame R, Bushek D, Allen D, Lewitus A, Edwards D, Koepfler E, and Gregory L (2002) Ecosystem response to bivalve density reduction: management implications. *Aquatic Ecology* 36: 51-65.
- Dame R, Childers D, Koepfler E (1992) A geohydrologic continuum theory for the spatial and temporal evolution of marsh-estuary ecosystems. *Netherlands Journal of Sea Research* 30: 63-72.
- Dame RF, Bushek D, Allen D, Edwards D, Gregory L, Lewitus A, Crawford S, Koepfler E, Corbett C, Kjerfve B, and Prins T (2000) The experimental analysis of tidal creeks dominated by oyster reefs; the pre-manipulation year. *Journal of Shellfish Research* 19: 361-369.
- Dame RF, Chrzanowski T, Bildstein K, Kjerfve B, McKellar HN, Nelson D, Spurrier J, Stancyk SE, Stevenson H, Vernberg FJ, and Zingmark R (1986) The outwelling hypothesis in North Inlet, South Carolina. *Marine Ecology Progress Series* 33: 217-229
- Dame RF, Spurrier JD, Williams TM, Kjerfve B, Zingmark RG, Wolaver TG, Chrzanowski TH, McKellar HN Jr., and Vernberg FJ (1991) Annual material processing by a salt marsh-estuarine basin in South Carolina, USA. *Marine Ecology Progress Series* 72: 153-166
- Dapremont A, and Greenfield DI (2011) The distribution of *Pseudo-nitzschia* spp. along the southeastern U.S. during May-June 2011. NSF Minorities in Marine and Environmental Science Symposium, Charleston, SC.

- Deaton, A.S., W.S. Chappell, K. Hart, J. O'Neal, B. Boutin. 2010. North Carolina Coastal Habitat Protection Plan. North Carolina Department of Environment and Natural Resources. Division of Marine Fisheries, NC. 639 pp. portal.ncdenr.org/web/mf/59
- DiDonato, GT, JR Stewart, DM Sanger, BJ Robinson, BC Thompson, AF Holland, RF Van Dolah. 2008. Effects of Changing Land Use on the Microbial Water Quality of Tidal Creeks. *Marine Pollution Bulletin* 58(1):97-106.
- Dodd, M.G., Murphy, T.M. (1996) The status and distribution of wading birds in South Carolina, 1988-1996. Final Report. 66.
- Duernberger, K. 2009. Tracing nitrogen through the food chain of an urbanized tidal creek. M.S. Thesis, The University of North Carolina Wilmington, Wilmington, N.C. 70 p.
- Edmonds JW, Weston NB, Joye SB, Moran MA (2008) Variation in Prokaryotic Community Composition as a Function of Resource Availability in Tidal Creek Sediments. *Applied and Environmental Microbiology* 74(6): 1836-1844.
- Estevez ED, Meaux KL, Cutler JK, Sprinkel J, and Janneman R (2010) A method for assessing tidal creek status and trends in southwest Florida using a condition index based on ecological variables and rapid-survey methods. Cooper, ST Proceedings, Tampa Bay Area Scientific Information Symposium, BASIS 5: 20-23 October 2009. St. Petersburg, FL 538.
- Fagherazzi S, Hannion M, D'Odorico P (2008) Geomorphic structure of tidal hydrodynamics in salt marsh creeks. *Water Resources Research* 44 (WO2419).
- Feller RJ, Coull BC, Hentschel BT (1990) Meiobenthic copepods: tracers of where juvenile *Leiostomus xanthurus* (Pisces) feed? *Canadian Journal of Fisheries and Aquatic Sciences*. 47: 1913-1919.
- Filipowicz AB (2004) Physical, chemical, and biological quality of headwater tidal creeks of the May River Estuary, Beaufort County, South Carolina. Masters Thesis College of Charleston Charleston, SC 165.
- Freedland, K.D., D.W. Ahrenholz and J.F. Guthrie. 1989. Influence of plankton on distribution patterns of the filter feeder *Brevoortia tyrannus* (Pisces: Clupeidae). *Marine Ecology Progress Series* 54:1-11.
- French JR and Stoddart DR (1992) Hydrodynamics of salt marsh creek systems: implications for marsh morphological development and material exchange. *Earth Surface Processes and Landforms* 17:235-252.
- Gardner LR (1975) Runoff from an intertidal marsh during tidal exposure-recession curves and chemical characteristics. *Limnology and Oceanography* 20: 81-89.
- Garner TR, Weinstein JE, Sanger DM (2009) Polycyclic aromatic hydrocarbon contamination in South Carolina salt marsh-tidal creek systems: relationships among sediments, biota, and watershed land use. *Archives of Environmental Contamination and Toxicology* 57(1):103-115.
- Gawle, CP (2002) Tidal creek responses to watershed development: a comparison of summer 1994 and winter 2000 data. (Thesis) University of Charleston, Charleston, SC
- Gillett, DJ, AF Holland, DM Sanger. 2005. Secondary Production of a Dominant Oligochaete *Monopylephorus rubroniveus* in the Tidal Creeks of South Carolina and its Relation to Ecosystem Characteristics. *Limnology and Oceanography* 50(2):566-577.
- Gillett, DJ, AF Holland, DM Sanger. 2007. Ecology of Oligochaetes: Monthly Variation in Community Composition and Environmental Characteristics of Two South Carolina Tidal Creeks. *Estuaries and Coasts* 30(2):238-252.

- Goyal, S.M., C.P. Gerba and J.L. Melnick. 1977. Occurrence and distribution of bacterial indicators and pathogens in canal communities along the Texas coast. *Applied and Environmental Microbiology* 34:139-149.
- Greenwood, Marin FD (2007) Nekton community change along estuarine salinity gradients: can salinity zones be defined? *Estuaries and Coasts* 30(3): 537-542.
- Gillett DJ (2003) Secondary production of the numerically dominant species *Monopylephorus rubronivues* (Levinsen, 1884). Masters Thesis College of Charleston Charleston, SC 108.
- Gonzalez CJ, Alvarez O, Reyes J, Acevedo A (2010) Two-dimensional modeling of hydrodynamics and sediment transport in the San Pedro tidal creek (Cadiz Bay): Morphodynamical implications. *Ciencias Marinas* 36(4).
- Hackney CT, Burbanck WD, and Hackney OP (1976) Biological and physical dynamics of a Georgia tidal creek. *Chesapeake Science* 17: 271-280. 76.
- Haertel-Borer SS, Allen DM, and Dame RF (2004) Fishes and shrimps are significant sources of dissolved inorganic nutrients in intertidal salt marsh creeks. *Journal of Experimental Marine Biology and Ecology* 311(1): 79-99.
- Handler, N.B., A. Paytan, C.P. Higgins, R.G. Luthy and A.B. Bocham. 2006. Human development is linked to multiple waterbody impairments along the California coast. *Estuaries and Coasts* 29:860-870.
- Harwell, H.D., M.H. Posey and T.D. Alphin. 2011. Landscape aspects of oyster reefs: Effects of fragmentation on habitat utilization. *Journal of Experimental Marine Biology and Ecology* 409:30-41.
- Hettler, W.F. 1989. Nekton use of regularly-flooded saltmarsh cordgrass habitat in North Carolina, USA. *Marine Ecology Progress Series* 56: 111-118.
- Holland AF (2000) Coastal Sentinels. *South Carolina Wildlife* 47: 36-40.
- Holland, AF, DM Sanger. 2004. The Tidal Creeks Project: Understanding Linkages between Creeks and Urban Sprawl. Brochure published by HML for public distribution.
- Holland, AF, DM Sanger. 2008. Tidal Creek Habitats: Sentinels of Coastal Health. Booklet published by SC Sea Grant Consortium and NOAA for coastal decision makers.
- Holland, A.F., D. M. Sanger, C.P. Gawle, S. B. Lerberg, M.S. Santiago, G. H.M. Riekerk, L.E. Zimmerman and G. I. Scott. 2004. Linkages between tidal creek ecosystems and the landscape and demographic attributes of their watersheds. *Journal of Experimental Marine Biology and Ecology* 298:151-178.
- Hoss, D.E., Thayer, G.W. 1993. The importance of habitat to the early life history of estuarine dependent fishes. *American Fisheries Society Symposium* 14:147-158.
- Houser DS, and Allen DM (1996) Zooplankton dynamics in an intertidal salt marsh basin. *Estuaries* 19(3): 659-673.
- Hughes ZJ, FitzGerald DM, Wilson CA, Pennings SC, Wieski K, and Mahadevan A (2009) Rapid headward erosion of marsh creeks in response to relative sea level rise. *Geophysical Research Letters* 36 (L03602).
- Johnson WS, Allen DM, Ogburn MV, and Stancyk SE (1990) Short-term predation responses of bay anchovies, *Anchoa mitchilli*, to zooplankton prey availability. *Marine Ecology Progress Series* 64: 55-68.
- Johnson, V.L. 2005. Primary productivity by phytoplankton: temporal, spatial and tidal variability in two North Carolina tidal creeks. M.S. Thesis, University of North Carolina Wilmington, Wilmington, N.C. 73 pp.

- Jones, R.C. 1980. Productivity of algal epiphytes in a Georgia salt marsh: effect of inundation frequency and implications for total marsh productivity. *Estuaries* 3:315-317.
- Jones SE. 2008. Effects of urbanization on nekton abundance and food web structures in southeastern tidal creeks. Masters Thesis College of Charleston Charleston, SC.
- Kara E, Shade A (2009) Temporal Dynamics of South End Tidal Creek (Sapelo Island, Georgia) Bacterial Communities. *Applied and Environmental Microbiology* 75(4): 1058-1064.
- Karkowski R, Ahern D, Klink RE (2010) Volume based hydrology design - Is it time? South Carolina Environmental Conference Proceedings 17.
www.sc-ec.org/images/Proceedings10/23-5%20Karkowski.pdf
- Kelsey, H., D.E. Porter, G. Scott, M. Neet and D. White. 2004. Using geographic information systems and regression analysis to evaluate relationships between land use and fecal coliform bacterial pollution. *Journal of Experimental Biology and Ecology* 298:197-209.
- Kleypas JA, Dean JM (1983) Migration and feeding of the predatory fish, *Bairdiella chrysura* Lacepede, in an intertidal creek. *Journal of Experimental Biology and Ecology* 72: 199-209.
- Kneib RT (1997) The role of tidal marshes in the ecology of estuarine nekton. *Oceanography and Marine Biology Annual Review* 35: 163-220.
- Krebs JM, Bell SS (2011) Risk of predation reflects variation in the reproductive strategy of a dominant forage fish in mangrove tidal tributaries. *Oecologia* Online 20 Sept. 201.1
- Krebs JM, Peebles EB, Weinstein MP, and McConnell RG (2010) Revisiting and updating our knowledge on the science of Tampa Bay's tidal tributaries: session synthesis. Cooper, ST Proceedings, Tampa Bay Area Scientific Information Symposium, BASIS 5: 20-23 October 2009. St. Petersburg, FL 538.
- Krebs JM, Brame AB, and McIvor CC (2007) Altered mangrove wetlands as habitat for estuarine nekton: are dredged channels and tidal creeks equivalent? *Bulletin of Marine Science* 80(3): 839-86.1
- Kuenzler, E.J. 1974. Mangrove swamp systems. Chapter B-1 in (H.T. Odum, B.J. Copeland and E.A. McMahan, Eds.) *Coastal Ecological Systems of the United States*. The Conservation Foundation, Washington, D.C.
- Kwak, T.J., Zedler, J.B. 1997. Food web analysis of southern California coastal wetlands using multiple stable isotopes. *Oecologia* 110:262-277.
- Lapointe, B.E., J.D. O'Connell and G.S. Garrett. 1990. Nutrient couplings between on-site sewage disposal systems, groundwaters, and nearshore surface waters of the Florida Keys. *Biogeochemistry* 10:289-307.
- Lapointe, B.E., Clark, M.W. 1992. Nutrient inputs from the watershed and coastal eutrophication in the Florida Keys. *Estuaries* 15:465-476.
- Lehnert RL, and Allen DM (2002) Nekton use of subtidal oyster shell habitat in a southeastern U.S. estuary. *Estuaries* 25: 1015-1024.
- Lenkopane M, Werner AD, Lockington DA, Li L (2009) Influence of variable salinity conditions in a tidal creek on riparian groundwater flow and salinity dynamics. *Journal of Hydrology* 375: 536-545.
- Lerberg SB, Holland AF, Sanger DM (2000) Responses of tidal creek macrobenthic communities to the effects of watershed development. *Estuaries* 23: 838-853
- Lerberg, SB (1997) Effects of watershed development on macrobenthic communities in tidal creeks of the Charleston Harbor area. Masters Thesis College of Charleston Charleston, SC 257.

- Ley JA, McIvor CC, Peebles EB, and Rolls H (2010) Defining fish nursery habitats: an application of otolith elemental fingerprinting in Tampa Bay, Florida. Cooper, ST Proceedings, Tampa Bay Area Scientific Information Symposium, BASIS 5: 20-23 October 2009. St. Petersburg, FL 538.
- Lewitus, A.J., Schmidt, L.B., Mason, L.J., Kempton, J.W., Wilde, S.B., Wolny, J.L., Williams, B.J., Hayes, K.C., Hymel, S.N., Keppler, C.J., Ringwood, A.H. 2003. Harmful algal blooms in South Carolina residential and golf course ponds. *Population and Environment* 24:387-413.
- Lewitus, A.J., T. Kawaguchi, G. R. DiTullio and J.D.M. Keesee. 2004. Iron limitation of phytoplankton in an urbanized vs. forested U.S. salt marsh estuary. *Journal of Experimental Marine Biology and Ecology* 298:233-254.
- Lipp, E.K., J.B. Rose, R. Vincent, R.C. Kurz and C. Rodriguez-Palacios. 1999. Diel variability of microbial indicators of fecal pollution in a tidally influenced canal: Charlotte Harbor, Florida. Southwest Florida Water Management District, Technical Report.
- Lipp, E.K., S.A. Farrah and J.B. Rose. 2001a. Assessment and impact of fecal pollution and human enteric pathogens in a coastal community. *Marine Pollution Bulletin*. 42:286-293.
- Lipp, E.K., R. Kurz, R. Vincent, C. Rodriguez-Palacios, S.K. Farrah and J.B. Rose. 2001b. The effects of seasonal variability and weather on microbial fecal pollution and enteric pathogens in a subtropical estuary. *Estuaries* 24: 266-276.
- Luther, G.W. III, S. Ma, R. Trouborst, B. Glazer, M. Blickley, R.W. Scarborough and M.G. Mensinger. 2004. The roles of anoxia, H₂S, and storm events in fish kills of dead-end canals of Delaware Inland Bays. *Estuaries* 27:551-560.
- MacDonald TC, Matheson RE Jr., Peebles EB, McMichael RH Jr., and Greenwood MFD (2010) Tidal creeks as nekton habitat in the Tampa Bay estuary. Cooper, ST Proceedings, Tampa Bay Area Scientific Information Symposium, BASIS 5: 20-23 October 2009. St. Petersburg, FL 538.
- MacMillin, K.M., L.K. Blum and A.L. Mills. 1992. Comparison of bacterial dynamics in tidal creeks of the lower Delmarva Peninsula, Virginia, USA. *Marine Ecology Progress Series* 86:111-121.
- Macpherson TA, Cahoon LB, and Mallin MA (2007) Water column oxygen demand and sediment oxygen flux: patterns of oxygen depletion in tidal creeks. *Hydrobiologia* 586: 235-248
- Malkin E, Hollander D, and Peebles E (2010) Using estuarine fish stable nitrogen isotopes to pinpoint land cover nutrient origins. Cooper, ST Proceedings, Tampa Bay Area Scientific Information Symposium, BASIS 5: 20-23 October 2009. St. Petersburg, FL 538
- Malkin EM, Peebles EB, Hollander DJ (2007) Stable isotope analysis of Tampa Bay tidal tributary and tidal creek ecosystems.
- Malkin, Elon M. (2010) The economically important nitrogen pathways of southwest Florida.
- Mallin, M.A. and T.L. Wheeler. 2000. Nutrient and fecal coliform discharge from coastal North Carolina golf courses. *Journal of Environmental Quality* 29:979-986.
- Mallin, M.A. and A.J. Lewitus. 2004. The importance of tidal creek ecosystems. *Journal of Experimental Marine Biology and Ecology* 298:145-149.
- Mallin, M.A., Esham, E.C., Williams, K.E., Nearhoof, J.E. 1999. Tidal stage variability of fecal coliform and chlorophyll *a* concentrations in coastal creeks. *Marine Pollution Bulletin* 38:414-422.

- Mallin, M.A., L.B. Cahoon, R.P. Lowe, J.F. Merritt, R.K. Sizemore and K.E. Williams. 2000. Restoration of shellfishing waters in a tidal creek following limited dredging. *Journal of Coastal Research* 16:40-47.
- Mallin, M.A., Williams, K.E., Esham, E.C., Lowe, R.P. 2000. Effect of human development on bacteriological water quality in coastal watersheds. *Ecological Applications* 10:1047-1056 .
- Mallin, M.A., S.H. Ensign, M.R. McIver, G.C. Shank and P.K. Fowler. 2001. Demographic, landscape, and meteorological factors controlling the microbial pollution of coastal waters. *Hydrobiologia* 460:185-193.
- Mallin, M.A., D.C. Parsons, V.L. Johnson, M.R. McIver and H.A. CoVan. 2004. Nutrient limitation and algal blooms in urbanizing tidal creeks. *Journal of Experimental Marine Biology and Ecology* 298:211-231.
- Mallin, M.A., S.H. Ensign, D.C. Parsons, V.L. Johnson, J.M. Burkholder and P.A. Rublee. 2004. Relationship of *Pfiesteria* spp. and *Pfiesteria*-like organisms to environmental factors in tidal creeks draining urban watersheds. pp 68-70 in Steidinger, K.A., J.H. Landsberg, C.R. Tomas and G.A. Vargo, (Eds.) *XHAB, Proceedings of the Tenth Conference on Harmful Algal Blooms, 2002*, Florida Fish and Wildlife Conservation Commission, Florida Institute of Oceanography, and Intergovernmental Commission of UNESCO.
- Mallin, M.A., V.L. Johnson, S.H. Ensign and T.A. MacPherson. 2006. Factors contributing to hypoxia in rivers, lakes and streams. *Limnology and Oceanography* 51:690-701.
- Mallin, M.A., L.B. Cahoon, B.R. Toothman, D.C. Parsons, M.R. McIver, M.L. Ortwine and R.N. Harrington. 2007. Impacts of a raw sewage spill on water and sediment quality in an urbanized estuary. *Marine Pollution Bulletin* 54:81-88.
- Mallin, M.A., V.L. Johnson and S.H. Ensign. 2009. Comparative impacts of stormwater runoff on water quality of an urban, a suburban, and a rural stream. *Environmental Monitoring and Assessment* 159:475-491.
- Marani M, Belluco E, D'Alpaos A, Defina A, Lanzoni , and Rinaldo A (2003) On the drainage density of tidal networks. *Water Resources* 39(2): 1040.
- Maxted, J.R., Weisberg, S.B., Chaillou, J.C., Eskin, R.A., Kutz, F.W. 1997. The ecological condition of dead-end canals of the Delaware and Maryland coastal bays. *Estuaries* 20:319-327.
- McKay P, Di Iorio D (2010) Cycle of vertical and horizontal mixing in a shallow tidal creek. *Journal of Geophysical Research* 115: C01004.
- Miltner, R.J., S.W. Ross and M.H. Posey. 1995. Influence of food and predation on the depth distribution of juvenile spot (*Leiostomos xanthurus*) in tidal nurseries. *Canadian Journal of Fisheries and Aquatic Sciences* 52: 971-982.
- Mooraki N, Sari AE, Soltani M, Valinassab T (2009) Spatial distribution and assemblage structure of macrobenthos in a tidal creek in relation to industrial activities. *International Journal of Environmental Science and Technology* 6(4): 651-662.
- Moore RH, and Reis RR (1983) Analysis of spatial and temporal variations in biomass and community structure of motile organisms in Town Creek, a South Carolina tidal pass. *Contributions in Marine Science* 26: 111-125.
- Necaise, A.M.D., S.W. Ross and J.M. Miller. 2005. Estuarine habitat evaluation measured by growth of juvenile summer flounder *Paralichthys dentatus* in a North Carolina estuary. *Marine Ecology Progress Series* 285:157-168.

- Nelson, K.A., L.A. Leonard, M.H. Posey, T.D. Alphin and M.A. Mallin. 2004. Transplanted oyster (*Crassostrea virginica*) beds as self-sustaining mechanisms for water quality improvement in small tidal creeks. *Journal of Experimental Marine Biology and Ecology* 298:347-368.
- Novakowski KI, Torres R, Gardner LR, Voulgaris G (2004) Geomorphic analysis of tidal creek networks. *Water Resources Research* 40 (W05401).
- Nummedal D, Oertel GF, Hubbard DK, Hines AC (1977) Tidal inlet variability - Cape Hatteras to Cape Canaveral. Coastal Sediments 77, 5th Symposium of the Waterway, Port, Coastal and Ocean Division, ASCE 1133.
- Odum, WE (1984) Dual-gradient concept of detritus transport and processing in estuaries. *Bulletin of Marine Science* 35: 510-521.
- Odum, W.E., C.C. McIver and T.J. Smith, III. 1982. The Ecology of the Mangroves of South Florida: a Community Profile. U.S. Fish and Wildlife Service, FWS/OBS-81/24.
- Odum, W.E. 1988. Comparative ecology of tidal freshwater and salt marshes. *Annual Review of Ecological Systems* 19:147-176.
- Ogburn-Matthews V, and Allen DM (1993) Interactions among some dominant estuarine nekton species. *Estuaries* 16:840-850.
- Pinckney JL, and Zingmark RG (1993) Modeling the annual production of intertidal benthic microalgae in estuarine ecosystems. *Journal of Phycology* 29: 396-407
- Pomeroy, L.R. 1959. Algal productivity in salt marshes of Georgia. *Limnology and Oceanography* 4:386-397.
- Posey, M.H., T.D. Alphin, L.B. Cahoon, D.G. Lindquist, M.A. Mallin and M.E. Becker. 1999. Interactive effects of nutrient additions and predation on infaunal communities. *Estuaries* 22(3B):785-792.
- Posey, M.H., T.D. Alphin, L.B. Cahoon, D.G. Lindquist, M.A. Mallin and M.E. Nevers. 2002. Resource availability versus predator control: questions of scale in benthic infaunal communities. *Estuaries* 25:999-1014.
- Potthoff MT, Allen DM (2003) Site fidelity, home range, and tidal migrations of juvenile pinfish, *Lagodon rhomboids*, in salt marsh creeks. *Environmental Biology of Fishes* 67: 231-240
- Rakocinski CF, Baltz DM, Fleeger JW (1992) Correspondence between environmental gradients and community structure of marsh-edge fishes in a Louisiana estuary. *Marine Ecology Progress Series* 80: 135-148.
- Reis RR, Dean JM (1981) Temporal variation in the utilization of an intertidal creek by the bay anchovy. *Estuaries* 4(1): 16-23.
- Rinaldo A, Fagherazzi S, Lanzoni S, and Marani M (1999) Tidal networks 2. Watershed delineation and comparative network morphology. *Water Resources Research* 35(12): 3905-3917.
- Rinaldo A, Fagherazzi S, Lanzoni S, and Marani M (1999) Tidal networks 3. Landscape-forming discharges and studies in empirical geomorphic relationships. *Water Resources Research* 35(12): 3919-3929.
- Rivera-Monroy V.H., C.J. Madden, J.W. Day, Jr., R.R. Twilley, F. Vera-Herrera and H. Alvarez-Guillen. 1998. Seasonal coupling of a tropical mangrove forest and an estuarine water column: enhancement of aquatic primary productivity. *Hydrobiologia* 379:41-53.
- Roberts, T. L. 2002. Chemical constituents in the Pee Dee and Castle Hayne Aquifers: Porters Neck Area, New Hanover County, North Carolina. M.S. Thesis, University of North Carolina Wilmington, Wilmington, N.C. 63 pp.

- Ross, S.W. and J. Bichy. 2002. Checklist of the fishes documented from the Zeke's Island and Masonboro Island components of the North Carolina National Estuarine Research Reserve. Technical Report Series 2002:2, National Estuarine Research Reserve System, NOAA.
- Ross, S.W. 2003. The relative value of different estuarine nursery areas in North Carolina for transient juvenile marine fishes. *Fishery Bulletin* 101:384-404.
- Sanders, J.G. and E.J. Kuenzler. 1979. Phytoplankton population dynamics and productivity in a sewage enriched tidal creek in North Carolina. *Estuaries* 2:87-96.
- Sanger D, Bergquist D, Blair A, Riekerk G, Wirth E, Webster L, Felber J, Washburn T, DiDonato G, Holland AF (2011). Gulf of Mexico Tidal Creeks Serve as Sentinel Habitats for Assessing the Impact of Coastal Development on Ecosystem Health NOAA Technical Memorandum NOS NCCOS 136 Silver Springs, MD 64.
- Sanger D, Blair A, DiDonato G, Washburn T, Jones S, Chapman R, Bergquist D, Riekerk G, Wirth E, Stewart J, White D, Vandiver L, White S, Whitall D (2008) Support for Integrated Ecosystem Assessments of NOAA's National Estuarine Research Reserves System (NERRS), Volume I.: The Impacts of Coastal Development on the Ecology and Human Well-being of Tidal Creek Ecosystems of the US Southeast NOAA Technical Memorandum NOS NCCOS 82 Silver Springs, MD 76.
- Sanger DM, Holland AF, and Hernandez DL (2004) Evaluation of the impacts of dock structures and land use on tidal creek ecosystems in South Carolina estuarine environments. *Environmental Management* 33(3): 385-400.
- Sanger DM, Holland AF, Scott GI (1999) Tidal creek and salt marsh sediments in South Carolina coastal estuaries: I. Distribution of trace metals. *Archives of Environmental Contamination and Toxicology* 37: 445-457.
- Sanger DM, Holland AF, Scott GI (1999) Tidal creek and salt marsh sediments in South Carolina coastal estuaries: II. Distribution of organic contaminants. *Archives of Environmental Contamination and Toxicology* 37: 458-47.1
- Sanger, DM (1998) Physical, chemical and biological environmental quality of tidal creeks and salt marshes in South Carolina estuaries. Ph.D. Dissertation. University of South Carolina, Columbia, South Carolina.
- Schueler, T. (1994) The importance of imperviousness. *Watershed Protection Techniques* 1: 100-111.
- Shenker JM, Dean JM (1979) The utilization of an intertidal salt marsh creek by larval and juvenile fishes: abundance, diversity and temporal variation. *Estuaries* 2(3): 154-163.
- Sherwood, ET (2010) Results and management recommendations from the 2006 Tampa Bay Tidal Tributaries Habitat Initiative. Cooper, ST Proceedings, Tampa Bay Area Scientific Information Symposium, BASIS 5: 20-23 October 2009. St. Petersburg, FL 538.
- Siegel A, Cotti-Rausch B, Greenfield DI, and Pinckney J (2011) Nutrient controls of planktonic cyanobacteria abundance in coastal storm water detention ponds. *Marine Ecology Progress Series* 434: 15-27.
- Smith CE (2005) An assessment of suburban and urban storm water runoff entering tidal creeks in Charleston, South Carolina. Masters Thesis College of Charleston Charleston, SC 13.
- South Carolina Department of Natural Resources (2004) A baseline assessment of environmental and biological conditions in the May River, Beaufort County, South Carolina. Van Dolah RF, Sanger DM, Filipowicz AB SCDNR Final Report. 226.

- Stumpf CH, Piehler MF, Thompson S, Noble RT (2010) Loading of fecal indicator bacteria in North Carolina tidal creek headwaters: Hydrographic patterns and terrestrial runoff relationships. *Water Research* 44: 4704-4715.
- Spivey, M.I.H. 2008. The use of PCR and T-RFLP as a means of identifying sources of fecal bacteria pollution in the tidal creeks of New Hanover Soutny, North Carolina. M.S. Thesis, the University of North Carolina Wilmington, Wilmington, N.C. 57 p.
- Stith B.M., J.P. Reid, C.A. Langtimm, E.D. Swain, T.J. Doyle, D.H. Slone, J.D. Decker and L.D. Soderqvist. 2010. Temperature inverted haloclines provide winter warm-water refugia for manatees in southwest Florida. *Estuaries and Coasts*. 34:106-119.
- Sogard, S.M. and K.W. Able. 1991. A comparison of eelgrass, sea lettuce macroalgae, and marsh creeks as habitats for epibenthic fishes and decapods. *Estuarine, Coastal and Shelf Science* 33:501-519.
- Tampa Bay Tidal Tributary Research Team (2008) Tampa Bay Tidal Tributary Habitat Initiative Project: Final Report and Management Recommendations. Sherwood, ET Tampa Bay Estuary Program Technical Report #02-08. Report to the Pinellas County Environmental Fund. St. Petersburg, FL 83.
- Tavares, M.E., M.I.H. Spivey, M.R. McIver and M.A. Mallin. 2008. Testing for optical brighteners and fecal bacteria to detect sewage leaks in tidal creeks. *Journal of the North Carolina Academy of Science* 124:91-97.
- Thayer, G.W., D.R. Colby and W.F. Hettler. 1988. The mangrove prop root habitat: a refuge and nursery area for fish. P 15-29 in *Ecologia y Consevacion del Delta de los Rios. Usumacinta y Crijalva Memorias*. INIREB-Div. Regional Tabasco, Gobierno del Estrada do Tabasco. SECUR IV. Comite Regional Conalrex, UNESCO.
- Toothman, B.R., L.B. Cahoon and M.A. Mallin. 2009. Phosphorus and carbohydrate limitation of fecal coliform and fecal enterococcus within tidal creek sediments. *Hydrobiologia* 636:401-412.
- Tampa Bay Tidal Tributary Research Team (2008) Tampa Bay Tidal Tributary Habitat Initiative Project: Final Report and Management Recommendations. Sherwood, ET Tampa Bay Estuary Program Technical Report #02-08. Report to the Pinellas County Environmental Fund St. Petersburg, FL 83.
- Traynum S, and Styles R (2007) Flow, stress, and sediment responses in a shallow tidal channel. *Estuaries and Coasts* 30(1): 94-101.
- Tampa Bay Tidal Tributary Research Team (2008) Tampa Bay Tidal Tributary Habitat Initiative Project: Final Report and Management Recommendations. Sherwood, ET Tampa Bay Estuary Program Technical Report #02-08. Report to the Pinellas County Environmental Fund. St. Petersburg, FL 83.
- Tuckey TD, Dehaven M (2006) Fish assemblages found in tidal-creek and seagrass habitats in the Suwannee River estuary. *Fisheries Bulletin* 104: 102-11.
- Van Dolah RF, Bergquist DC, Riekerk GHM, Levisen MV, Crowe SE, Wilde SB, Chestnut DE, McDermott W, Fulton MH, Wirth E, Harvey J (2006) The Condition of South Carolina's Estuarine and Coastal Habitats During 2003-2004: Technical Report. Technical Report No. 101 SCDNR Marine Resources Division Charleston, SC 70.
- Van Dolah RF, Jutte PC, Riekerk GHM, Levisen MV, Crowe S, Lewitus A, Chestnut DE, McDermott W, Bearden D, Fulton MH (2004) The Condition of South Carolina's Estuarine and Coastal Habitats During 2001-2002: Technical Report. Technical Report No. 100 SCDNR Marine Resources Division Charleston, SC 73.

- Van Dolah RF, Jutte PC, Riekerk GHM, Levisen MV, Zimmerman LE, Jones JD, Lewitus AJ, Chestnut DE, McDermott W, Bearden D, Scott GI, Fulton MH (2002) The Condition of South Carolina's Estuaries and Coastal Habitats During 1999-2000: Technical Report. Technical Report No. 90 SCDNR Marine Resources Division Charleston, SC 132.
- Van Dolah, RF, DM Sanger, AB Filipowicz (editors). 2004. A Baseline Assessment of Environmental and Biological Conditions in the May River, Beaufort County, South Carolina. SCDNR Final Report. 226 p.
- Van Dolah, RF, GHM Riekerk, MV Levisen, GI Scott, MH Fulton, D Bearden, S Sivertsen, KW Chung, DM Sanger. 2005. An Evaluation of Polycyclic Aromatic Hydrocarbon (PAH) Runoff from Highways into Estuarine Wetlands of South Carolina. *Archives of Environmental Contamination and Toxicology* 49:362-370.
- Van Dolah, R.F., G.H.M. Reikerk, D.C. Bergquist, J. Felber, D.E. Chestnut and A.F. Holland. 2008. Estuarine habitat quality reflects urbanization at large spatial scales in South Carolina's coastal zone. *Science of the Total Environment* 390:142-154.
- Vitousek PM, Mooney HA, Lubchenco J, Melillo JM (1997) Human domination of earth's ecosystems. *Science* 25: 494-499.
- Voulgaris G, Meyers ST (2004) Temporal variability of hydrodynamics, sediment concentration and sediment settling velocity in a tidal creek. *Continental Shelf Research* 24: 1659-1683.
- Wagner R, Klink RE, Ahern D (2011) Consideration of low-impact development benefits in Beaufort County. *Florida Watershed Journal* 4(1):19-22.
www.bluetoad.com/publication/?i=60407&pre=1
- Wagner, RA (2010) Consideration of Low Impact Development Benefits in Beaufort County. South Carolina Environmental Conference Proceedings 14.
www.sc-ec.org/images/Proceedings10/23-1%20Wagner.pdf
- Walsh, BL (1975) The role of grass shrimp, *Palaemonetes pugio*, in a tidal marsh ecosystem. *Ecology* 56: 513-530.
- Washburn T, Sanger D (2011) Land use effects on macrobenthic communities in southeastern United States tidal creeks. *Environmental Monitoring and Assessment* 180(1-4): 177-188.
- Washburn, TW (2008) The macrobenthic communities of southeastern United States tidal creeks. Masters Thesis College of Charleston Charleston, SC 187.
- Weinstein, M.P. 1979. Shallow marsh habitats as primary nurseries for fishes and shellfish, Cape Fear River, North Carolina. *Fishery Bulletin* 77:339-357.
- Wenner, E., D. Sanger, M. Arendt, A.F. Holland and Y. Chen. 2004. Variability in dissolved oxygen and other water-quality variables within the national Estuarine Research Reserve system. *Journal of Coastal Research* 45:17-38.
- Wendt PH, Vandolah RF, Bobo MY, Mathews TD, and Levisen MV (1996) Wood preservative leachates from docks in an estuarine environment. *Archives of Environmental Contamination and Toxicology* 31(1): 24-37.
- Wessel MR, and Janicki AJ (2010) Developing an index of phytoplankton biomass for Tampa Bay's Lower Alafia River. Cooper, ST Proceedings, Tampa Bay Area Scientific Information Symposium, BASIS 5: 20-23 October 2009. St. Petersburg, FL 538.
- Wetz, M.S., A.J. Lewitus, E.T. Koepfler and K.C. Hayes. 2002. Impact of the Eastern oyster *Crassostrea virginica* on microbial community structure in a salt marsh estuary. *Aquatic Microbial Ecology* 28:87-97.

- Wetz MS, Hayes KC, Lewitus AJ, Wolny JL, and White DL (2006) Variability in phytoplankton pigment biomass and taxonomic composition over tidal cycles in a salt marsh estuary. *Marine Ecology Progress Series* 320: 109-120.
- White, D.L., D.E. Porter and A.J. Lewitus. 2004. Spatial and temporal analyses of water quality and phytoplankton biomass in an urbanized versus a relatively pristine salt marsh estuary. *Journal of Experimental Biology and Ecology* 298:255-273.
- White, DL, D Wolf, DE Porter, DM Sanger, GHM Riekerk, G DiDonato, AF Holland, D Dabney. 2008. Development of a Data Management Framework in Support of Southeastern Tidal Creek Research. *Environmental Monitoring and Assessment* 150:323-331.
- Whiting G, and Childers D (1989) Subtidal advective water flux as a potentially important nutrient import to southeastern U.S.A. saltmarsh estuaries. *Estuarine, Coastal and Shelf Science* 28: 417-431.
- Whiting GJ, McKellar HN Jr., Spurrier JD, and Wolaver TG (1989) Nitrogen exchange between a portion of vegetated salt marsh and the adjoining creek. *Limnology and Oceanography* 34: 463-473.
- Wolanski E, Spagnol S, Thomas S, Moore K, Alongi DM, Trott L, Davidson A (2000) Modelling and Visualizing the Fate of Shrimp Pond Effluent in a Mangrove-fringed Tidal Creek. *Estuarine, Coastal and Shelf Science* 50: 85-97.
- Wolaver TG, Whiting GJ, Dame RF, Williams TM, and Spurrier JD (1988) Bly Creek ecosystem study - nitrogen exchange within a euhaline salt marsh basin of North Inlet, South Carolina. *Marine Ecology Progress Series* 49: 107-116.
- Wolaver TG, Zieman JC, Wetzel R, and Webb KL (1983) Nitrogen and Phosphorus exchange between a mesohaline vegetated marsh and the surrounding estuary. *Estuarine, Coastal and Shelf Science* 16: 321-332.
- Yeager LA, Krebs JM, McIvor CC, and Brame AB (2007) Juvenile blue crab abundances in natural and man-made tidal channels in mangrove habitat, Tampa Bay, Florida (USA). *Bulletin of Marine Science* 80(3): 555-565.
- Zimmerman LE (1997) Effects of watershed development on macrobenthic colonization processes in tidal creeks of the Charleston Harbor area. Masters Thesis College of Charleston Charleston, SC 17.1